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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/988,107	11/19/2001	Takahiro Hachisu	35.C15966	8065

5514 7590 09/26/2003

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EXAMINER

SEFER, AHMED N

ART UNIT

PAPER NUMBER

2826

DATE MAILED: 09/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/988,107

Applicant(s)

HACHISU ET AL.

Examiner

A. Sefer

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (claims 1-10) is acknowledged.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1 and 2 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "within an ambient temperature range ..." is not well defined to enable one skilled in the art to make and/or use the invention.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 3-10, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Hachisu et al. (JP 2000-235187).

Hachisu et al disclose in fig. 1 a liquid crystal device comprising a pair of substrates 11a/11b retaining a smectic liquid crystal 18 therebetween and a plurality of bulkheads 16 made

of an acrylic photosensitive resin (as in claim 9) intersecting with a direction of a layer of the smectic liquid crystal provided on at least one of the pair of substrates except for the relation:

$$(1/E) \times P \times (A1/A2) \geq \Delta Vlc/Vlc$$

It would have been obvious to one skilled in the art at the time the invention was made to design a liquid crystal device wherein an elastic modulus E of the bulkheads, an outside pressure P, an area A1 of the substrate, a total area A2 of contact surfaces between the bulkheads and the substrate, and a volumetric shrinkage ratio $\Delta Vlc/Vlc$ of the smectic liquid crystal within an ambient temperature range of the liquid crystal device satisfying the relation recited in the claim, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involve only routine skill in the art. In re Aller, 105 USPQ 233.

As for claim 3, Hachisu et al disclose bulkheads intersecting at an angle of approximately 90.degree. with the direction of the layer of the smectic liquid crystal.

As for claim 5, Hachisu et al disclose pair of substrates bonded to each other by the bulkheads.

As for claim 10, Hachisu et al disclose a ferroelectric liquid crystal or an antiferroelectric smectic liquid crystal.

As for claims 4 and 6-8, the specification contains no disclosure of either the critical nature of the claimed arrangement or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

5. Claims 2-10, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Hachisu et al. (JP 2000-235187).

Hachisu et al disclose in fig. 1 a liquid crystal device comprising a pair of substrates 11a/11b retaining a smectic liquid crystal 18 therebetween and a plurality of stripe bulkheads 16 intersecting with a direction of a layer of the smectic liquid crystal provided on at least one of the pair of substrates except for the relation:

$$(1/E) \times L \times P \times (A1/A2) \geq \Delta Vlc / (D \times H).$$

It would have been obvious to one skilled in the art at the time the invention was made to design a liquid crystal device wherein an elastic modulus E, a height L, a spacing D, and a length H of the bulkheads, an outside pressure P, an area A1 of the substrate, a total area A2 of contact surfaces between the bulkheads and the substrate, and a volumetric shrinkage amount ΔVlc within an ambient temperature range of the liquid crystal device, of the smectic liquid crystal filled in a space defined by the pair of substrates and a pair of bulkheads satisfying the relation recited in the claim, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involve only routine skill in the art. In re Aller, 105 USPQ 233.

As for claim 3, Hachisu et al disclose bulkheads intersecting at an angle of approximately 90.degree. with the direction of the layer of the smectic liquid crystal.

As for claim 5, Hachisu et al disclose pair of substrates bonded to each other by the bulkheads.

As for claim 10, Hachisu et al disclose a ferroelectric liquid crystal or an antiferroelectric smectic liquid crystal.

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As for claims 4 and 6-8, the specification contains no disclosure of either the critical nature of the claimed arrangement or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (703) 605-1227.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601.

ANS
September 15, 2003

NATHAN J. FLYNN
SUPERVISOR, PATENT EXAMINER
TECHNOLOGY CENTER 2800